

CLAIMS

1. A purgeable container (10) for low vapor pressure, high purity chemicals for a high purity chemical delivery system, comprising:

5 (a) a container (10) for containing a quantity of said low vapor pressure, high purity chemical having at least two ports (11, 13) capable of receiving or dispensing said low vapor pressure, high purity chemical;

(b) a first block diaphragm valve assembly (14) having first (75) and second (77) diaphragm valves, each diaphragm valve having a diaphragm (74a) and having a valve
10 seat side (78a) and a diaphragm side (88), wherein the valve seat side (78a) of each diaphragm valve (75) is juxtaposed to the other valve seat side (78) of the other diaphragm (74), and each valve seat side of each diaphragm valve (75, 77) positioned to have low vapor pressure, high purity chemical flow communication with a conduit (16) of said high purity chemical delivery system, and said diaphragm side (88) of said first
15 diaphragm valve (75) having flow communication with a first (13) of said at least two ports, and said diaphragm side of said second diaphragm valve (77) positioned to have flow communication with a conduit (18) capable of a function selected from the group consisting of a source of vacuum, or a source of vent;

(c) a second valve means (114) having flow communication with a conduit (118)
20 capable of a function selected from the group consisting of a source of push gas, a source of vacuum, a dispense for low vapor pressure, high purity chemical; and

(d) said second port (11) having flow communication with said container (10) and capable of a function selected from the group consisting of a source of vacuum to said container (10), delivering push gas to said container (10) and dispensing low vapor
25 pressure, high purity chemical in a push gas from said container (10).

2. The container of Claim 1 wherein said valve seat side of said second diaphragm valve has flow communication with a conduit for a source of high pressure purge gas that is used to purge residual low volatility chemical from the wetted surface to vent or vacuum via the container port or vent/vacuum port.

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3. The container of Claim 2 wherein said second valve means (114) has flow communication with a conduit (118) for a source of vacuum (122).

4. The container of Claim 1 wherein said second valve means (114) has flow communication with a conduit (118) for dispense of low vapor pressure, high purity chemical.

5. The container of Claim 1 wherein said diaphragm side of said second diaphragm valve (77) has flow communication with a conduit (18) for a source of vacuum.

6. The container of Claim 1 wherein said diaphragm side of said second diaphragm valve (77) has flow communication with a conduit (18) for a source of vent.

7. The container of Claim 5 wherein said second valve means (114) has flow communication with a conduit (126) for purge gas.

8. A purgeable container (400) for low vapor pressure, high purity chemicals for a high purity chemical delivery system, comprising:

(a) a container (400) for containing a quantity of said low vapor pressure, high purity chemical having at least two ports (410, 412) capable of receiving or dispensing said low vapor pressure, high purity chemical;

5 (b) a first block diaphragm valve assembly (442) having first (MV3) and second (AV4) diaphragm valves, each diaphragm valve having a diaphragm and having a valve seat side and a diaphragm side, wherein the valve seat side of each diaphragm valve is juxtaposed to the other valve seat side of the other diaphragm valve, and each valve seat side of each diaphragm valve positioned to have low vapor pressure, high purity chemical flow communication with a conduit of said high purity chemical delivery system, 10 and said diaphragm side of said first diaphragm valve (MV3) having flow communication with a first (412) of said at least two ports, and said diaphragm side of said second diaphragm valve (AV4) positioned to have flow communication with a conduit (434) capable of a function selected from the group consisting of a source of vacuum, or a source of vent;

15 (c) another block diaphragm valve assembly (418) having two diaphragm valves (MV1, AV2), each diaphragm valve having a diaphragm and having a valve seat side and a diaphragm side, wherein the valve seat side of each diaphragm valve is juxtaposed to the other valve seat side of the other diaphragm valve, and each valve seat side of each diaphragm valve having flow communication with a second conduit, 20 and said diaphragm side of one (MV1) of said two diaphragm valves having flow communication with a second (410) of said at least two ports, and said diaphragm side of the other (AV2) of said two diaphragm valves having flow communication with a conduit (434) capable of a function selected from the group consisting of a source of vacuum, or a source of vent; and

25 (d) said second port (410) having flow communication with said container (400) and capable of a function selected from the group consisting of delivering push gas to

said first container, a source of vacuum and dispensing low vapor pressure, high purity chemical in a push gas from said container (400).

9. A purgeable container (400) for low vapor pressure, high purity chemicals
5 for a high purity chemical delivery system, comprising:

(a) a container (400) for containing a quantity of said low vapor pressure, high purity chemical having at least two ports (410, 412) capable of receiving and dispensing, respectively, said low vapor pressure, high purity chemical;

(b) a first block diaphragm valve assembly (442) having first (MV3) and second
10 (AV4) diaphragm valves, each diaphragm valve having a diaphragm and having a valve seat side and a diaphragm side, wherein the valve seat side of each diaphragm valve is juxtaposed to the other valve seat side of the other diaphragm valve, and each valve seat side of each diaphragm valve positioned to have low vapor pressure, high purity chemical flow communication with a dispense conduit (446) of said high purity chemical
15 delivery system, and said diaphragm side of said first diaphragm valve (MV3) having flow communication with a first (412) of said at least two ports and a diptube (414), and said diaphragm side of said second diaphragm valve (AV4) positioned to have flow communication with a conduit (434) capable of a function of a source of vent or vacuum;

(c) a second valve means (418) positioned to have flow communication with a
20 source of push gas and/or a source of vacuum; and

(d) said second port (410) having flow communication with said container (400) and capable of delivering push gas and/or vacuum to said container (400).

10. A purgeable container (400) for low vapor pressure, high purity chemicals
25 for a high purity chemical delivery system, comprising:

(a) a container (400) for containing a quantity of said low vapor pressure, high purity chemical having at least two ports (410, 412) capable of receiving and dispensing, respectively, said low vapor pressure, high purity chemical;

(b) a first block diaphragm valve assembly (442) having first (MV3) and second (AV4) diaphragm valves, each diaphragm valve having a diaphragm and having a valve seat side and a diaphragm side, wherein the valve seat side of each diaphragm valve is juxtaposed to the other valve seat side of the other diaphragm valve, and each valve seat side of each diaphragm valve positioned to have flow communication with a conduit (446) for a bubbling gas, and said diaphragm side of said first diaphragm valve having flow communication with a first (412) of said at least two ports, and said diaphragm side of said second diaphragm valve (AV4) positioned to have flow communication with a source of vent or vacuum (434);

(c) another block diaphragm valve assembly (418) having two diaphragm valves (MV1, AV2), each diaphragm valve having a diaphragm and having a valve seat side and a diaphragm side, wherein the valve seat side of each diaphragm valve is juxtaposed to the other valve seat side of the other diaphragm valve, and each valve seat side of each diaphragm valve positioned to have flow communication with a second conduit, and said diaphragm side of one (MV1) of said two diaphragm valves having flow communication with a second (410) of said at least two ports, and said diaphragm side of the other (AV2) of said two diaphragm valves positioned to have flow communication with a source of vent or vacuum (434); and

(d) said second port (410) having flow communication with said container (400) and capable of dispensing low vapor pressure, high purity chemical in a push gas from said container (400).